Day 4 - Actuators

Overview

In this session, we will learn about different types of actuators and how to interface them with the ESP8266 development board.

Actuators are the devices that do action. Major types are displays, motors, speakers, LEDs, etc. Depending on the type of action required, we can use different types of actuators with our IoT devices.

Session flow

Basic Actuators

Simple LEDs

Add a simple indicator to your application

Buzzer

Learn to generate different patterns of sound

DC Motor

Add movement to your projects

Advanced Actuators

LED Matrix Displays

LCD Displays

OLED Display

E-paper display

Addressable LEDs (WS2812)

Servo Motor

Stepper motor

Audio over speakers

Hands-on with different types of actuators using Wokwi

Resources

1. ESP8266 datasheet
2. Micropython tutorials for ESP8266
3. Quick reference for the ESP8266

Daily Challenge for Day 3

Problem Statement:

Use Wokwi to integrate a DHT11 sensor with ESP8266 and print the Temperature and Humidity values on the terminal.

Hint:

Sample code for integration is already available in the documentation

Prized Challenge 2

Problem Statement:

Build a network of 3 devices with the following features:

- Every device has a sensor and an actuator (sensor and actuator can be simulated)
- There is a common dashboard where we can see the sensor reading from the devices. Also, there should be buttons on the dashboard to control actuators on each device.

Constraints:

- The overall system should be wireless
- A dashboard can be on any platform of your choice. However, I recommend Node-RED.

Resources required:

- 3 WiFi-enabled Development boards
- A WiFi router/access point to connect the devices